



PM-10 Source Attribution and Deposition Study

Preproposal Conference
March 24, 2006





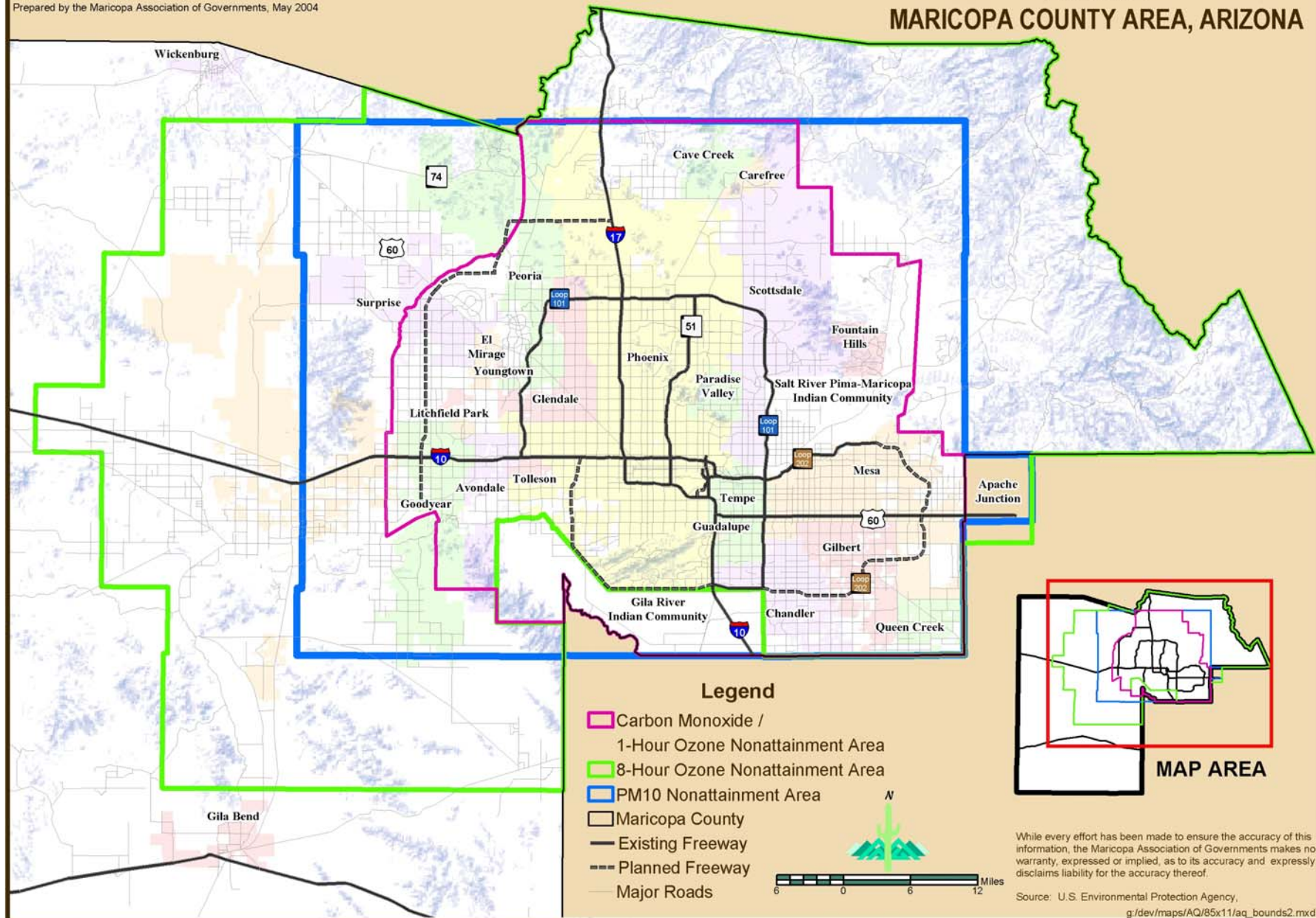
Role of MAG

- **Regional Air Quality Planning Agency**
 - Clean Air Act, Arizona Law
- **Conducts emissions and dispersion modeling**
- **Prepares regional air quality plans for carbon monoxide, ozone and particulates**
 - Serious Area CO Plan - 3/9/05*
 - CO Maintenance Plan - 3/9/05*
 - 1-Hour Ozone Maintenance Plan - 6/14/05*
 - Serious Area PM-10 Plan - 7/25/02*

*Date plan was approved by EPA



AIR QUALITY NONATTAINMENT AREAS FOR THE MARICOPA COUNTY AREA, ARIZONA





PM-10 Nonattainment Area

- **A 3,000 square mile area of Maricopa and Pinal Counties is a Serious Nonattainment Area for PM-10**
- **MAG 1999 Serious Area PM-10 Plan**
 - 77 control measures
 - Focus on fugitive dust reductions
 - EPA approved extension of attainment date to December 31, 2006
- **Due to recent monitored violations, the nonattainment area will not meet the PM-10 standards by December 31, 2006**





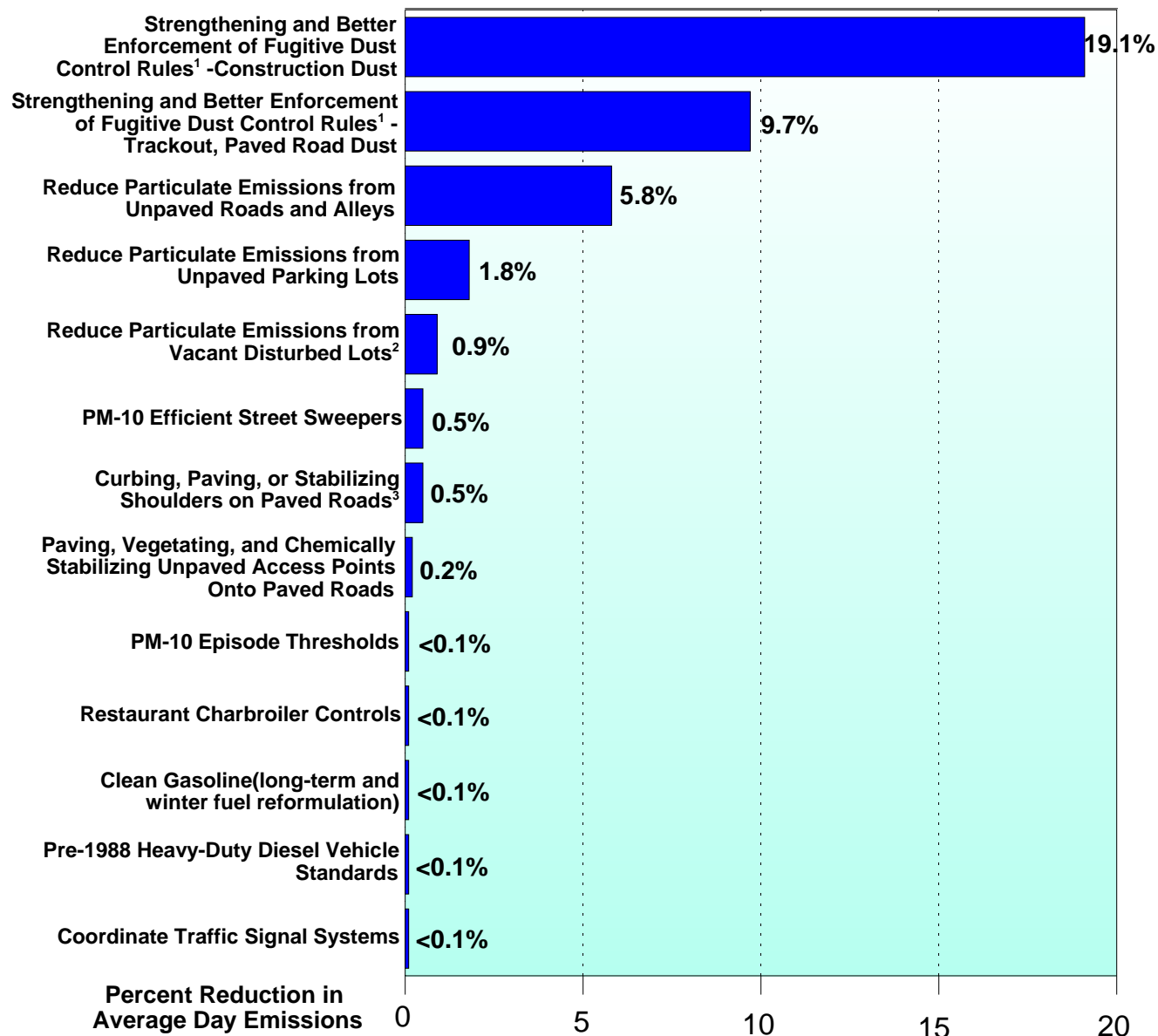
2006 PM-10 Emission Reductions

NOTES:

¹In addition, the emission reduction includes Dust Control Plans for Construction/Land Clearing and Industrial Sites

²In addition, the emission reduction includes Dust Abatement and Management Plan for State Lands

³In addition, the emission reduction includes Reduce Particulate Emissions from Unpaved Shoulders on Targeted Arterials





2006 PM-10 Emissions with Committed Control Measures

Source: Revised MAG 1999 Serious Area Particulate Plan for PM-10 for the Maricopa County Nonattainment Area, February 2000

Area Sources 20.2%

- Disturbed Vacant Land and Agricultural Windblown Dust 12.4%
- Agricultural Dust 2.9%
- Other Area Sources 3.9%
- Residential Wood Burning 1.0%

Point Sources 2.5%

Nonroad Sources 32.1%

- Construction/Earth Moving Dust 14.5%
- Construction Trackout 8.2%
- Nonroad Engine Exhaust 7.8%
- Construction Windblown Dust 1.6%

Onroad Sources 45.2%

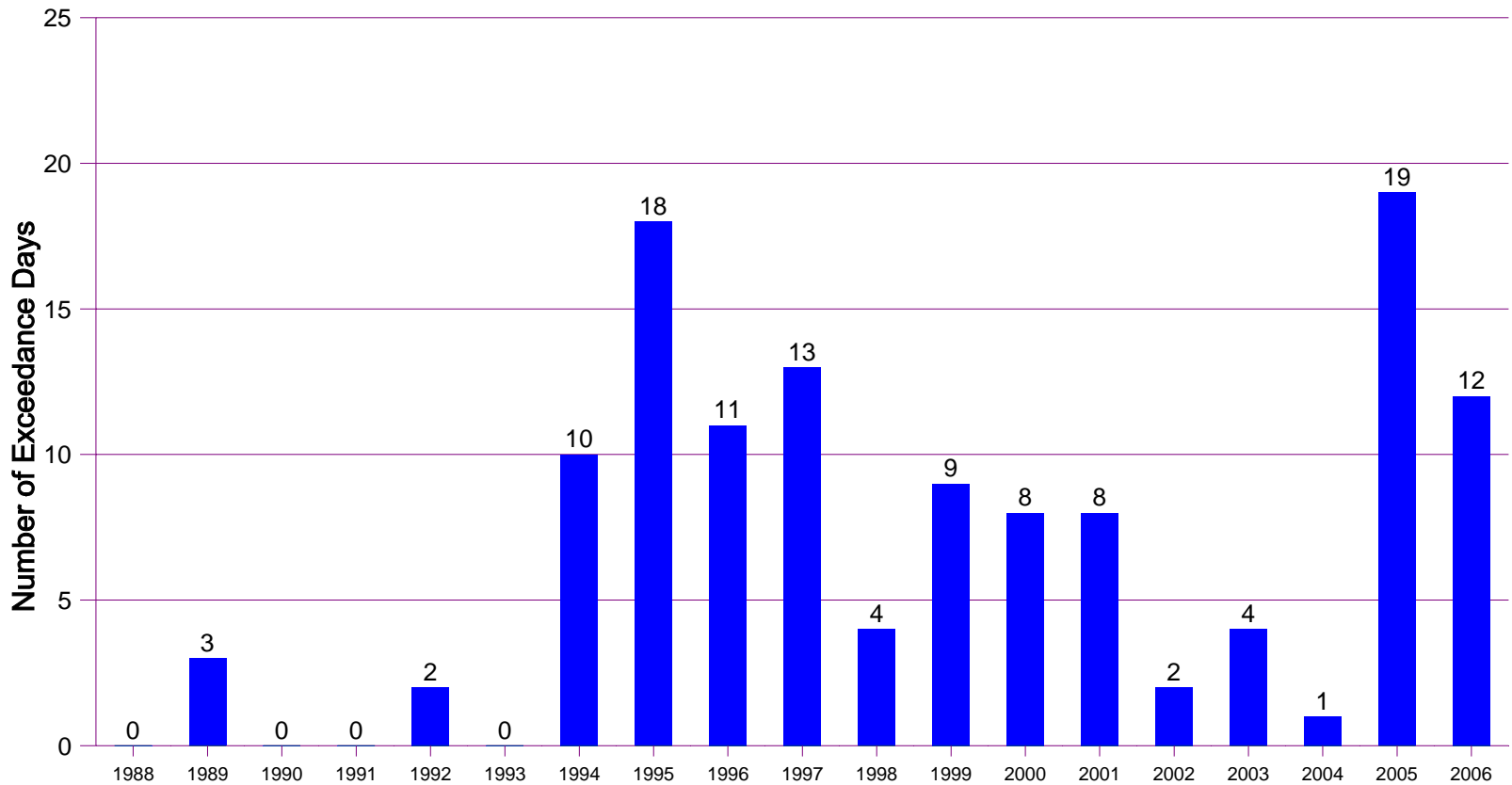
- Paved Road Dust 31.2%
- Unpaved Road Dust 11.9%
- Onroad Vehicle Exhaust 2.1%





PM-10 Monitoring Data

NUMBER OF 24-HR PM-10 EXCEEDANCE DAYS AT ALL MONITORS Maricopa County, Arizona



Notes:
August 13 and September 18, 2004 data were flagged as natural events.
2006 includes data through March 13, 2006
2005 and 2006 data may change after validation by Maricopa County.

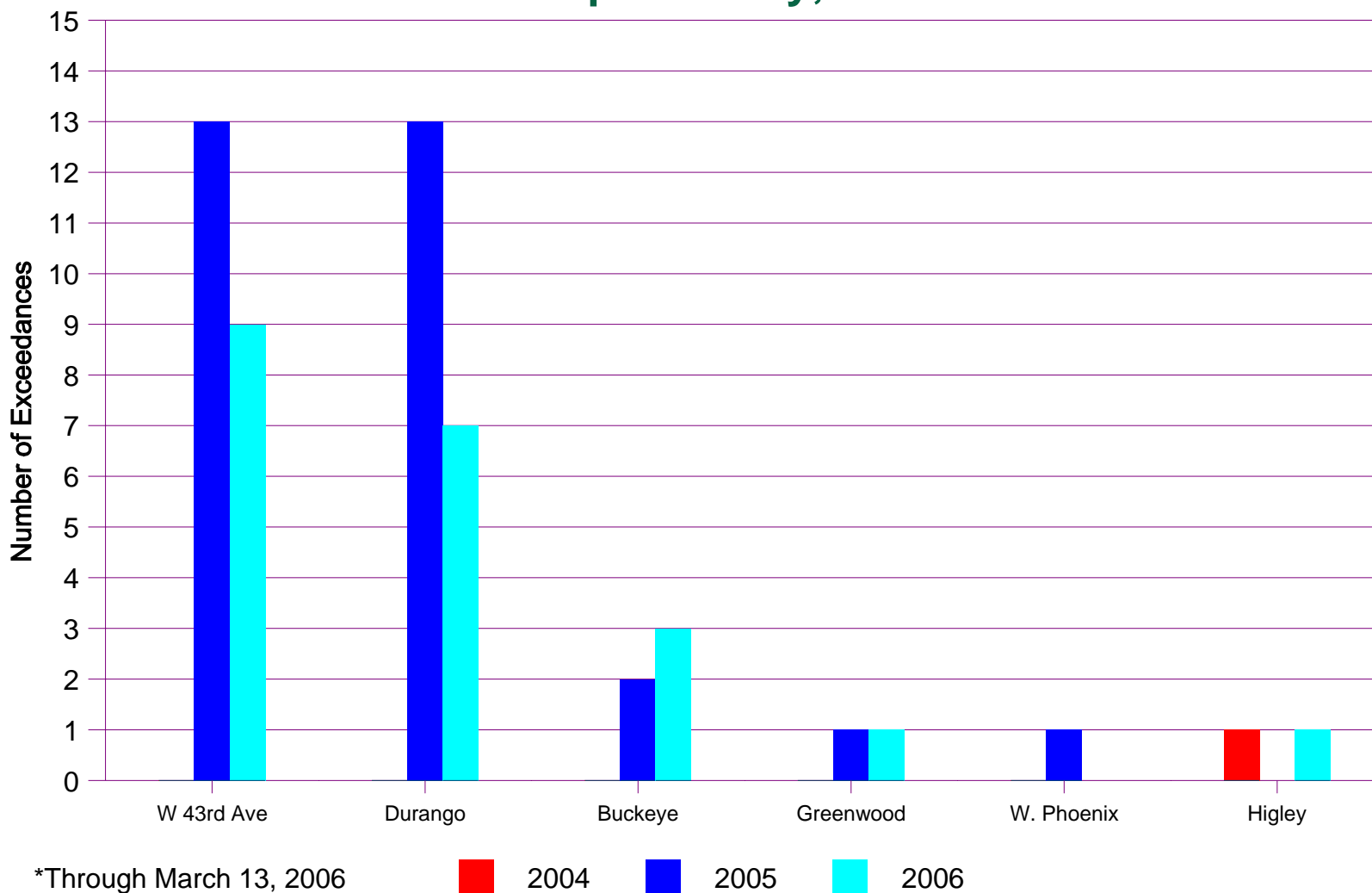
Reported by the Maricopa
Association of Governments 2005





PM-10 Monitoring Data

NUMBER OF 24-HR PM-10 EXCEEDANCES BY MONITOR 2004-2006* Maricopa County, Arizona





PM-10 Source Attribution and Deposition Study

■ Purpose

- Perform supplemental measurements and monitoring necessary to:
 - Identify sources of emissions contributing to elevated PM-10 concentrations at monitors
 - Characterize the deposition behavior of particles emitted by these sources
- To improve dispersion modeling, emissions inventories, and selection of control measures for the Five Percent Plan For PM-10





PM-10 Source Attribution and Deposition Study

■ **Five Percent Plan for PM-10**

- Required due to violations of the PM-10 standards in 2004-2006
 - Exceedances at 6 monitors
 - Most exceedances occurred at West 43rd and Durango monitors
- Must show five percent reduction per year in PM-10 emissions until attainment is achieved at all monitors
 - Requires three years of “clean” data
 - The earliest attainment date is now 2009
- Must be submitted to EPA by 12/31/07





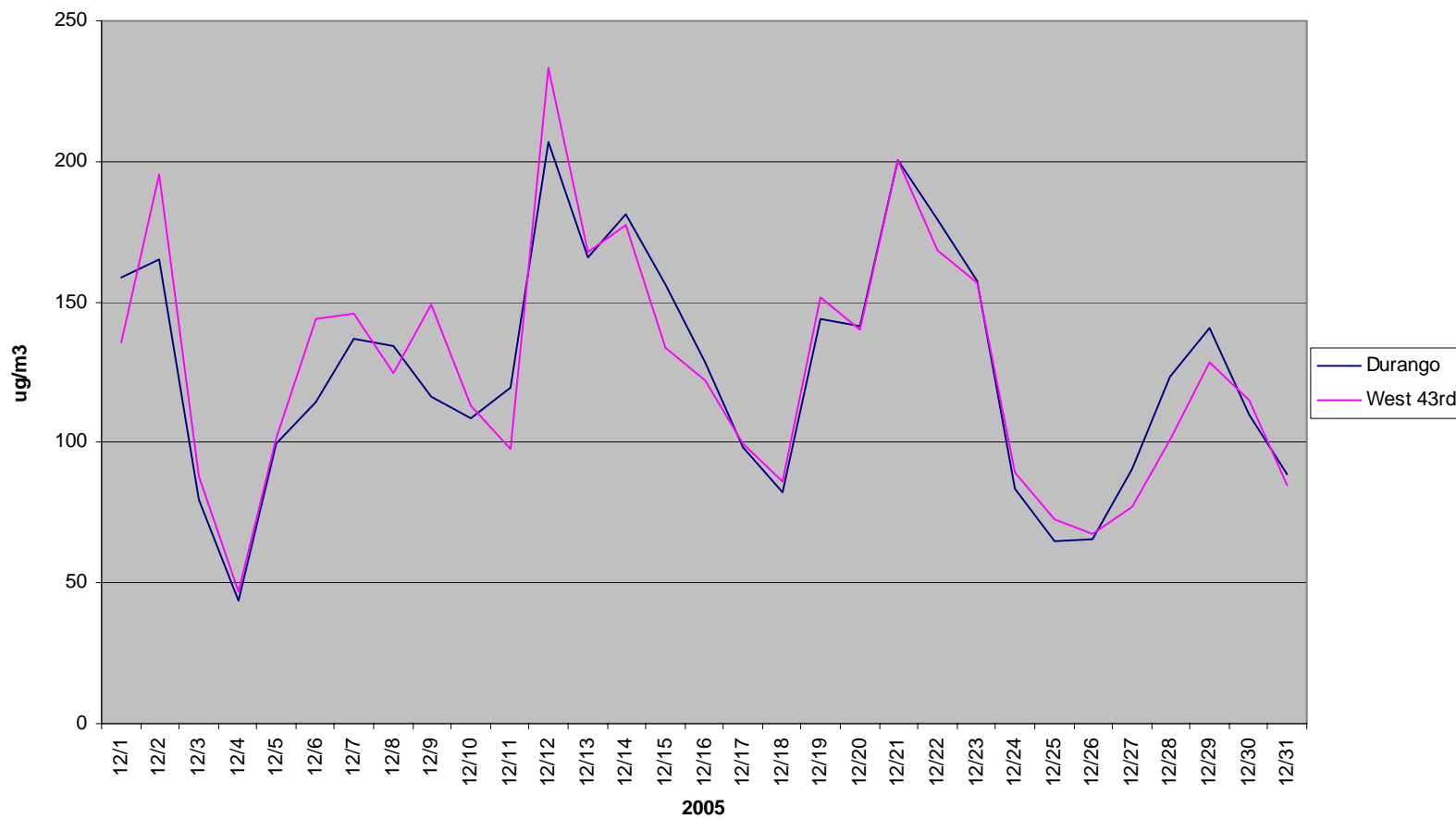
PM-10 Source Attribution and Deposition Study

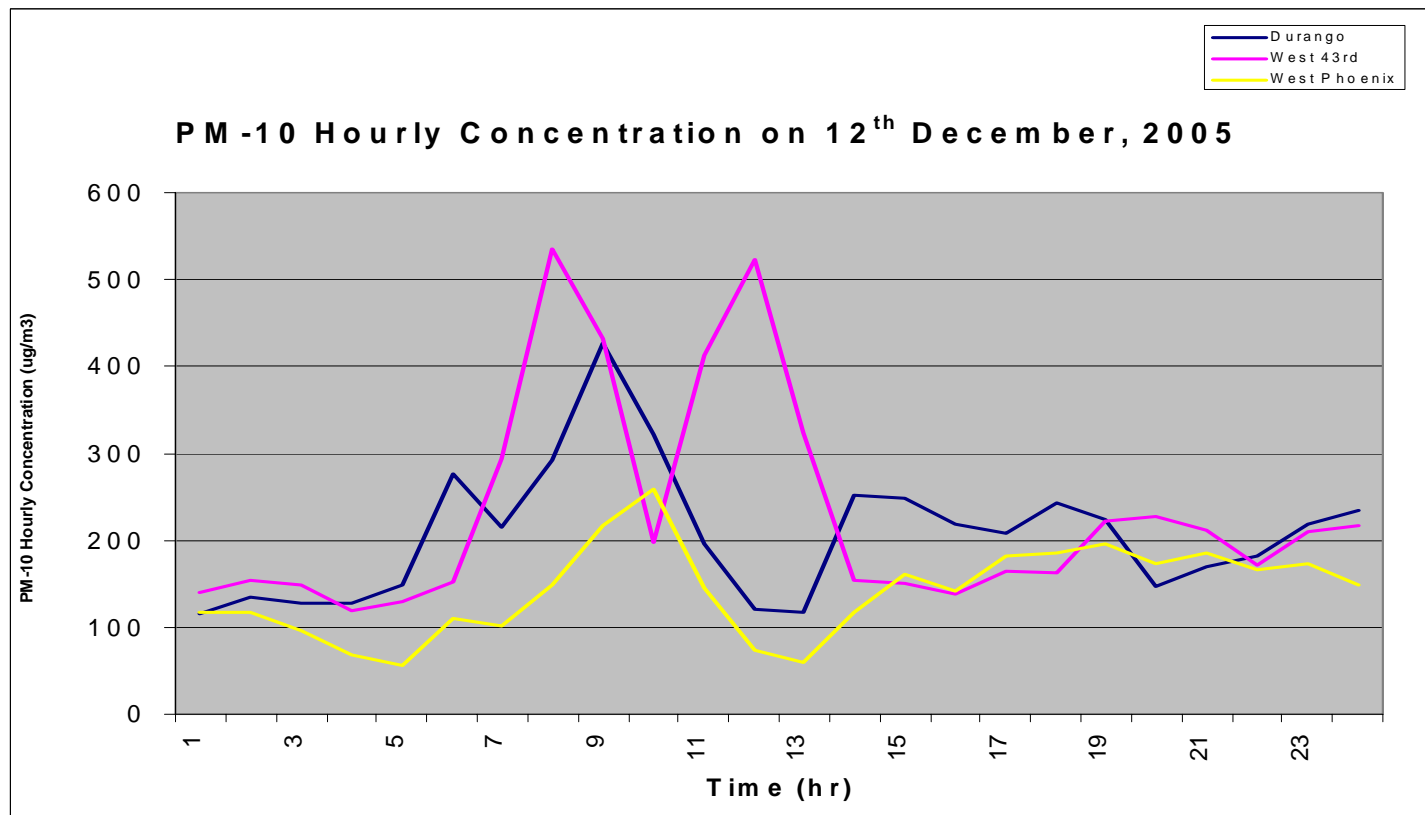
- **Most exceedances occurred during Nov 2005 - Feb 2006**
- **Aggravated by**
 - 143 days of drought
 - No measurable precipitation between October 18, 2005 and March 11, 2006
 - Stagnant conditions
 - Inversions and low winds
- **No exceedances on weekends**
- **Hourly PM-10 concentrations at West 43rd and Durango monitors often have morning and evening peaks**





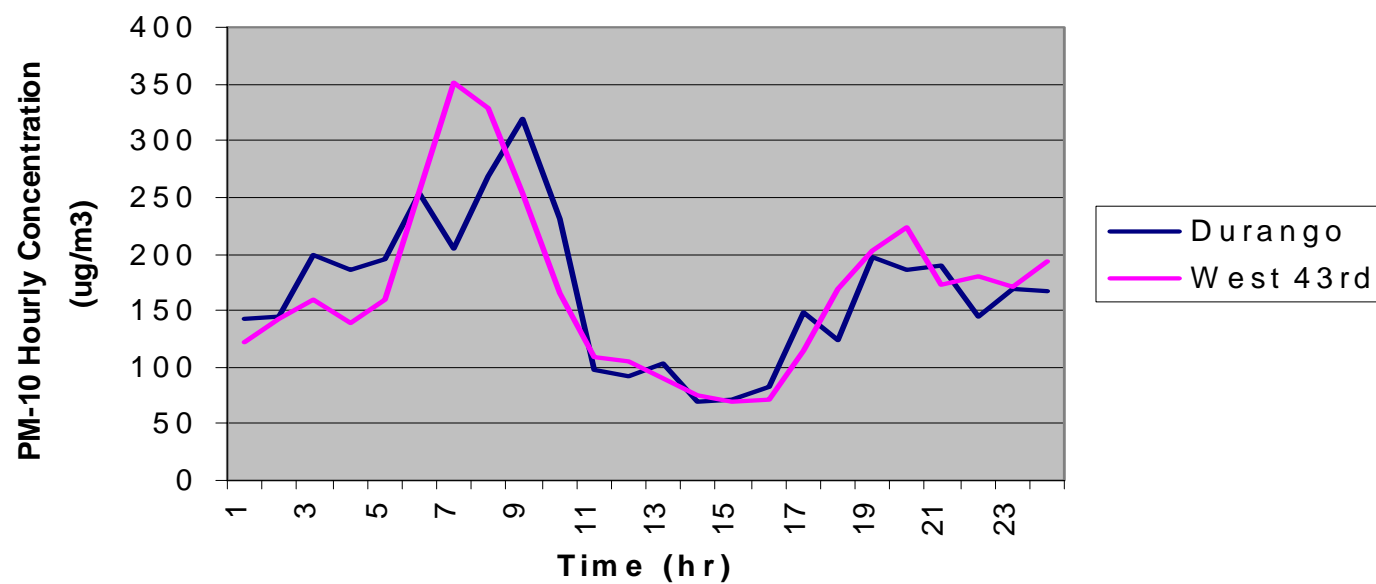
24-Hour PM-10 at Durango and West 43rd





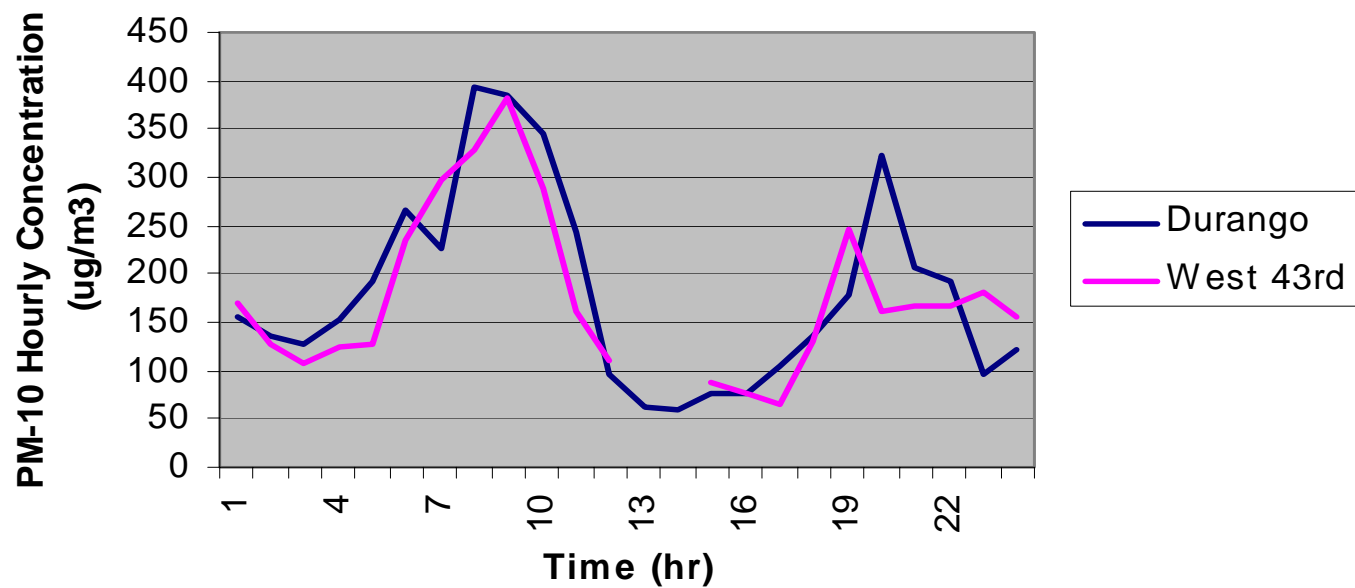


**PM-10 Hourly Concentration on 13th December,
2005**





PM-10 Hourly Concentration on 14th December, 2005



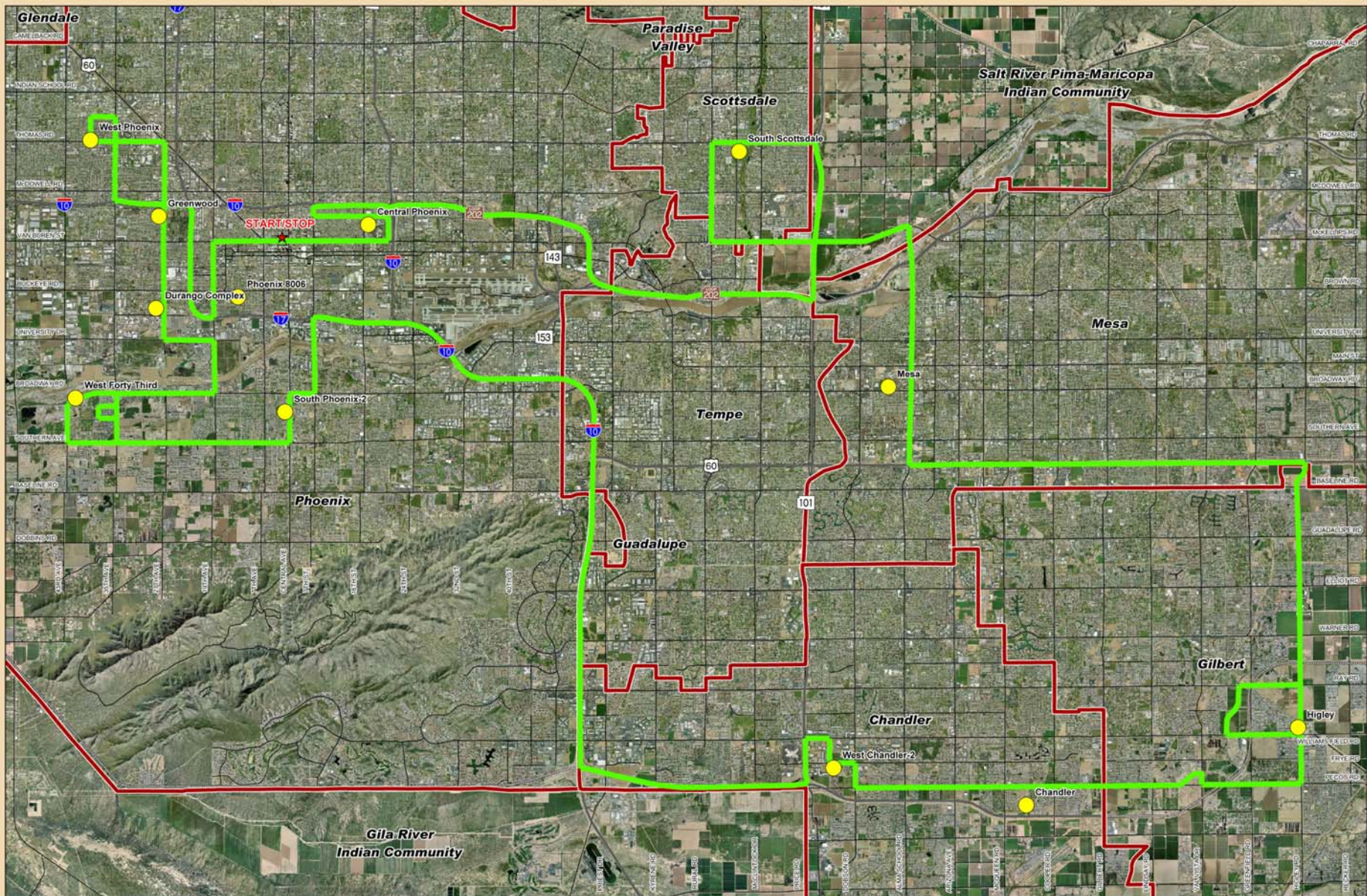


PM-10 Source Attribution and Deposition Study

■ **MAG Silt Loading Study**

- UC Riverside is under contract to develop paved road emission rates for PM-10
- Using System for Continuous Aerosol Monitoring of Particulates from Roads (SCAMPER)
- 100+ mile route designed to represent the PM-10 nonattainment area
- SCAMPER data collection periods
 - Ongoing: March 21-25, 2006
 - June, September, and December 2006
- Study to be completed by February 2007

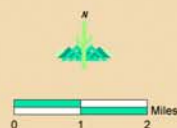




SCAMPER ROUTE

January 19, 2006

- Existing Freeways
- Proposed Freeways
- Major Roads
- SCAMPER Route
- PM10 Monitors
- MAG Boundary



While every effort has been made to ensure the accuracy of this information, the Maricopa Association of Governments makes no warranty, expressed or implied, as to its accuracy and expressly disclaims liability for the accuracy thereof.



PM-10 Source Attribution and Deposition Study

- **This study should utilize data from**
 - The Revised PM-10 State Implementation Plan for the Salt River Area, Sept 2005
 - Prepared by the Arizona Department of Environmental Quality (ADEQ)
 - www.azdeq.gov/environ/air/plan/pm10.html
 - 2002 emissions inventories and PM-10 modeling for the 32-square mile Salt River Area
 - Monitoring done by ADEQ in the Salt River Basin in 2003





PM-10 Source Attribution and Deposition Study

■ Research topic

- High PM-10 readings at some monitors may have been caused by fugitive dust on the paved roads being re-suspended into the air by vehicle traffic
 - What are the sources that are responsible for generating the fugitive dust being deposited on these roads?





PM-10 Source Attribution and Deposition Study

■ Research topic

- The monitors that exceeded the PM-10 standard most frequently are located near the Salt River Basin
 - What role does the Basin play in trapping and/or transporting PM-10?
 - What is the chemical composition of the PM-10 at the monitors and in the Basin?
 - If PM-10 is being transported within the Basin, how far is the PM-10 being transported and what are the upwind sources?
 - What sources are responsible for the PM-10 measured in the Basin?





Scope of Work

- **Task 1 - Refine Scope of Work**
- **Task 2 - Conduct Literature Review**
 - Synopsis of prior studies in Maricopa County and other nonattainment areas with fugitive dust problems (i.e., Clark County)
- **Task 3 - Design Field Study**
 - Conduct field measurements and monitoring to identify the sources of emissions contributing to elevated PM-10 concentrations at monitors
 - Perform laboratory and analytical work (i.e., CMB)





Scope of Work

- **Task 3 - Design Field Study (Cont.)**
 - Apply techniques to discriminate among sources of fugitive dust such as
 - unpaved shoulders
 - vacant lots
 - construction
 - mineral processing
 - agriculture
 - Develop a GIS database that identifies the location of sources and monitors
 - Prepare a working paper describing the analysis and findings for each monitor





Scope of Work

- **Task 4 - Identify PM-10 Deposition Characteristics**
 - Conduct research and field work to determine how far particles travel from the emitting source to the monitors that record high PM-10 concentrations
 - Address stagnate & high wind conditions
 - Consider local meteorology and soil characteristics
 - Prepare a working paper describing PM-10 deposition characteristics
 - Data will be used in dispersion modeling for the Five Percent Plan





Scope of Work

- **Task 5 - Prepare Final Report**
 - Compendium of working papers
- **Task 6 - Presentations**
 - Up to two for MAG committees
- **Deliverables**
 - 3 working papers
 - 1 final report





Contract Cost and Schedule

- **Cost-reimbursement plus fixed fee not to exceed \$200,000**
- **Study to be completed within one year of notice to proceed**
- **DBE participation “goal” is 11 percent**
 - Achieving DBE goal is encouraged, but not a requirement for contract award





Proposal Requirements

- **Max of 30 pages**
- **Summarize approach**
- **Provide work plan**
- **Include preliminary schedule in bar chart format with delivery dates**
- **Staffing plan**
- **Resumes**





Proposal Requirements (cont.)

- **Certification of compliance with rules of professional conduct**
- **Summarize recent, relevant experience**
- **Labor/cost allocation budget in format shown in Appendix B**
- **Proposer's registration form in Appendix C**
- **DBE participation in Appendix D**





Proposal Evaluation Schedule

- **Monday, April 10 - Ten copies of the proposal due at MAG by 5 p.m. MST**
- **Tuesday, April 11 - Proposals opened publicly at 9 a.m. in MAG Palo Verde Room**
- **April 11-21 - Proposal evaluation**
- **Friday, April 28 - Consultant interviews, if necessary**
- **May 2006 - Consultant recommendation is reviewed by MAG committees**
- **On or about June 1, 2006 - Contract award; study begins**





For more information

<http://www.mag.maricopa.gov/rfp.cms?item=5848>

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